

My residence, post office address and citizenship are as stated below next to my name,
I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint
inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the
invention entitled SELF-ADDRESSABLE SELF-ASSEMBLING MICROELECTRONIC SYSTEMS AND
DEVICES FOR MOLECULAR BIOLOGICAL ANALYSIS AND DIAGNOSTICS the specification of which

is attached hereto.

XX

was filed on November 1, 1993

as Application

Serial No. 08/146,504

and was amended on _____

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the
claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance
with Title 37, Code of Federal Regulations, §1.56 (a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for
patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's
certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s):

(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in
the Patent and Trademark Office connected therewith: David B. Murphy, Esq.
REGISTRATION NO. 31,125

Address all telephone calls to DAVID B. MURPHY at telephone no. (714) 751-6606

Address all correspondence to DAVID B. MURPHY, ESQ., LYON & LYON
611 West Sixth Street, Los Angeles, CA 90017

Kindly recognize as associate attorneys: Roland N. Smoot, Reg. No. 18,718; Conrad R. Solom, Jr., Reg. No. 20,467; James W. Gerlach, Reg. No. 20,233; Robert M.
Taylor, Jr., Reg. No. 19,848; Samuel B. Stone, Reg. No. 19,297; Douglas E. Olson, Reg. No. 22,798; Robert E. Lyon, Reg. No. 24,171; Robert C. Weiss, Reg. No.
24,939; William E. Thomson, Jr., Reg. No. 20,719; Richard E. Lyon, Jr., Reg. No. 26,300; John D. McConaghy, Reg. No. 26,773; William C. Steffen, Reg. No.
26,811; Coe A. Bloomberg, Reg. No. 26,605; J. Donald McCarthy, Reg. No. 25,119; John M. Benassi, Reg. No. 27,483; James H. Shalck, Reg. No. 29,749; Allan W.
Jensen, Reg. No. 29,595; Robert W. Dickerson, Reg. No. 29,914; Roy L. Anderson, Reg. No. 30,240; David B. Murphy, Reg. No. 31,125; James C. Brooks, Reg. No.
29,898; Jeffrey M. Olson, Reg. No. 30,790; Steven D. Hemminger, Reg. No. 30,755; Jerrold B. Reilly, Reg. No. 32,293; and
Suzanne L. Biggs, Reg. No. 30,158 of LYON & LYON, 611 West Sixth Street, Los Angeles, California 90017, Telephone (619) 552-8400.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on infor-
mation and belief are believed to be true; and further that these statements were made with the knowledge that willful false
statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the
United States Code and that such willful false statements may jeopardize the validity of the application or any patents
issued thereon.

Full name of sole or first inventor Michael J. Heller

Inventor's signature Michael J. Heller

Date: 12/28/93

Residence 1614 Hawk View Drive, Encinitas, CA 92024

Citizenship USA

Post Office Address _____

ADDITIONAL INVENTORS

Full name of inventor Eugene Tu
Inventor's signature Eugene Tu Date: 12/28/93
Residence 3643 Mississippi Street, San Diego, CA 92104-4030
Citizenship USA
Post Office Address _____

Full name of inventor _____
Inventor's signature _____ Date: _____
Residence _____
Citizenship _____
Post Office Address _____

Full name of inventor _____
Inventor's signature _____ Date: _____
Residence _____
Citizenship _____
Post Office Address _____

Full name of inventor _____
Inventor's signature _____ Date: _____
Residence _____
Citizenship _____
Post Office Address _____

Applicant or Patentee:
 Serial or Patent No.: 08/146,504
 Filed or Issued: November 1, 1993
 For: "SELF-ADDRESSABLE SELF-ASSEMBLING MICROELECTRONIC SYSTEMS AND DEVICES FOR
 MOLECULAR BIOLOGICAL ANALYSIS AND DIAGNOSTICS"

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
 (37 CFR 1.9(f) and 1.27(c)) - SMALL BUSINESS CONCERN

I hereby declare that I am: MICHAEL J. HELLER

 the owner of the small business concern identified below:
 X an official of the small business concern empowered to act on behalf
 of the concern identified below:

NAME OF CONCERN: NANOTRONICS
 ADDRESS OF CONCERN: 3347 Industrial Court, Suite A
 San Diego, CA 92121

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third-party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the above-entitled invention, by inventor(s) Michael J. Heller & Eugene Tu described in

 the specification filed herewith
 X application serial number 08/146,504, filed November 1, 1993
 Patent No. , issued

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).
 *NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

NAME NANOGEN, INC.
 ADDRESS 15120 El Camino Real
Del Mar, CA 92014

 INDIVIDUAL XX SMALL BUSINESS CONCERN NONPROFIT ORGANIZATION

NAME
ADDRESS

____ INDIVIDUAL ☒ SMALL BUSINESS CONCERN ____ NONPROFIT ORGANIZATION

NAME
ADDRESS

____ INDIVIDUAL ____ SMALL BUSINESS CONCERN ____ NONPROFIT ORGANIZATION

NAME
ADDRESS

____ INDIVIDUAL ____ SMALL BUSINESS CONCERN ____ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent on which this verified statement is directed.

NAME OF PERSON SIGNING:

MICHAEL J. HELLER

TITLE OF PERSON OTHER THAN OWNER:

Vice President of Research

ADDRESS OF PERSON SIGNING:

3347 Industrial Court, Suite A
San Diego, CA 92121

Signature:

Michael J. Heller

Date:

12/29/93

Applicant or Patentee:

Serial or Patent No.: 08/146,504

Filed or Issued: November 1, 1993

For: "SELF-ADDRESSABLE SELF-ASSEMBLING MICROELECTRONIC SYSTEMS AND DEVICES FOR MOLECULAR BIOLOGICAL ANALYSIS AND DIAGNOSTICS"

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) and 1.27(c)) - SMALL BUSINESS CONCERN

I hereby declare that I am: HOWARD BIRNDORF the owner of the small business concern identified below: X an official of the small business concern empowered to act on behalf of the concern identified below:

NAME OF CONCERN: NANOGEN, INC.
ADDRESS OF CONCERN: 15120 El Camino Real
 Del Mar, CA 92014

I hereby declare that the above-identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under Section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third-party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the above-entitled invention, by inventor(s) Michael J. Heller & Eugene Tu described in

 the specification filed herewith
 X application serial number 08/146,504, filed November 1, 1993
 Patent No. , issued

If the rights held by the above-identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).
*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

NAME NANOTRONICS
ADDRESS 3347 Industrial Court, Suite A
 San Diego, CA 92121

 INDIVIDUAL XX SMALL BUSINESS CONCERN NONPROFIT ORGANIZATION

NAME
ADDRESS

____ INDIVIDUAL ____ SMALL BUSINESS CONCERN ____ NONPROFIT ORGANIZATION

NAME
ADDRESS

____ INDIVIDUAL ____ SMALL BUSINESS CONCERN ____ NONPROFIT ORGANIZATION

NAME
ADDRESS

____ INDIVIDUAL ____ SMALL BUSINESS CONCERN ____ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent on which this verified statement is directed.

NAME OF PERSON SIGNING:
TITLE OF PERSON OTHER THAN OWNER:
ADDRESS OF PERSON SIGNING:

HOWARD BIRNDORF
President
NANOGEN, INC.
15120 El Camino Real
Del Mar, CA 92014

Signature: _____

Date: 12-29-93

ASSIGNMENT

For valuable consideration, we, Michael J. Heller
FIRST MIDDLE INITIAL LAST
 of Encinitas, CA
CITY OR TOWN STATE
Eugene Tu
FIRST MIDDLE INITIAL LAST
 of San Diego, CA
CITY OR TOWN STATE
 and
 of San Diego, CA
CITY OR TOWN STATE
 hereby assign to NANOGEN, INC.
CITY OR TOWN STATE
 a California
 corporation having a place of business at 15120 El Camino Real,
Del Mar, California 92014
 and its successors and assigns (collectively hereinafter called "the Assignee"),
 the entire right, title and interest throughout the world in the inventions and
 improvements which are the subject of an application for United States Patent Serial
 No. 08/146,504, filed on November 1, 1993
~~Microarray Technology~~, entitled SELF-ADDRESSABLE SELF-

ASSEMBLING MICROELECTRONIC SYSTEMS AND DEVICES FOR MOLECULAR
BIOLOGICAL ANALYSIS AND DIAGNOSTICS

this assignment including said application and any and all the United States and
 foreign patents granted for any of said inventions or improvements, and the right
 to claim priority based on the filing date of said application under the International
 Convention for the Protection of Industrial Property, the Patent Cooperation
 Treaty, the European Patent Convention, and all other treaties of like purposes;
 and we authorize the Assignee to apply in all countries in our name or in its own
 name for patents and like rights of exclusion and for inventors' certificates for
 said inventions and improvements; and we agree for ourselves and our respective
 heirs, legal representatives and assigns, without further compensation to perform
 such lawful acts and to sign such further applications, assignments, Preliminary
 Statements and other lawful documents as the Assignee may reasonably request
 to effectuate fully this assignment.

IN WITNESS WHEREOF, I hereto set my hand and seal at San Diego
California this 4th day of March, 1994
Michael J. Heller L.S.
FIRST MIDDLE INITIAL LAST

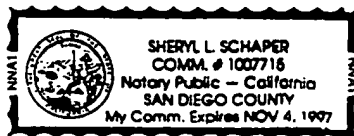
STATE OF California Michael J. Heller
SS
 COUNTY OF San Diego

Before me this 4th day of March, 1994, personally appeared
MICHAEL J. HELLER known to me to be the person whose name is
 subscribed to the foregoing Assignment and acknowledged that he executed the
 same as his free act and deed for the purposes therein contained.

Sheryl L. Schaper
 Notary Public

My Commission Expires:

[Notary's
 Seal Here]



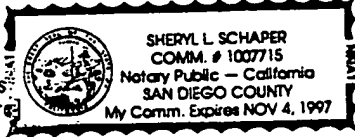
MY COMMISSION EXPIRES
 NOV 4 1997

FILED 6390 MAR 14 1994

IN WITNESS WHEREOF, I hereto set my hand and seal at San Diego,
California this 1st day of March, 1994.

STATE OF California FIRST MIDDLE INITIAL LAST L.S.
COUNTY OF San Diego Eugene Tu

Before me this 4th day of March, 1994, personally appeared
EUGENE TU known to me to be the person whose name is
subscribed to the foregoing Assignment and acknowledged that he executed the
same as his free act and deed for the purposes therein contained.

[Notary's Seal Here]  My Commission Expires:
**MY COMMISSION EXPIRES
NOV 4 1997**

IN WITNESS WHEREOF, I hereto set my hand and seal at _____,
_____ this _____ day of _____, 19____.

STATE OF _____ FIRST MIDDLE INITIAL LAST L.S.
COUNTY OF _____ SS.

Before me this _____ day of _____, 19____, personally appeared
_____ known to me to be the person whose name is
subscribed to the foregoing Assignment and acknowledged that he executed the
same as his free act and deed for the purposes therein contained.

Notary Public
My Commission Expires:
[Notary's Seal Here]

IN WITNESS WHEREOF, I hereto set my hand and seal at _____,
_____ this _____ day of _____, 19____.

STATE OF _____ FIRST MIDDLE INITIAL LAST L.S.
COUNTY OF _____ SS.

Before me this _____ day of _____, 19____, personally appeared
_____ known to me to be the person whose name is
subscribed to the foregoing Assignment and acknowledged that he executed the
same as his free act and deed for the purposes therein contained.

Notary Public
My Commission Expires:
[Notary's Seal Here]

FILED 390 (PART 2)

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

No. 5193

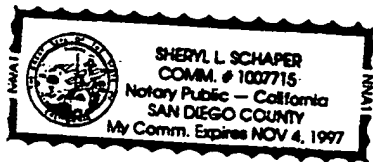
State of California

County of San Diego

On Mar 4, 1994 before me, Sheryl Schaper - Notary Public

personally appeared Eugene Su and Michael J. Heller

☐ personally known to me - OR - ☒ proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.



WITNESS my hand and official seal.

Sheryl L. Schaper
SIGNATURE OF NOTARY

OPTIONAL SECTION

CAPACITY CLAIMED BY SIGNER

Though statute does not require the Notary to fill in the data below, doing so may prove invaluable to persons relying on the document.

- ☐ INDIVIDUAL
☐ CORPORATE OFFICER(S)

- TITLE(S)
☐ PARTNER(S) ☐ LIMITED ☐ GENERAL
☐ ATTORNEY-IN-FACT
☐ TRUSTEE(S)
☐ GUARDIAN/CONSERVATOR
☐ OTHER: _____

SIGNER IS REPRESENTING:

NAME OF PERSON(S) OR ENTITY(IES)

THIS CERTIFICATE MUST BE ATTACHED TO THE DOCUMENT DESCRIBED AT RIGHT:

Though the data requested here is not required by law, it could prevent fraudulent reattachment of this form.

OPTIONAL SECTION

TITLE OR TYPE OF DOCUMENT Assignment

NUMBER OF PAGES 2 DATE OF DOCUMENT 3/4/94

SIGNER(S) OTHER THAN NAMED ABOVE Same

RECORDED
COUNTY CLERK'S OFFICE

MAR 14 94